Bringing Back the Past: The Impact of Procuring Low-Tech Strike Assets on Air Force Culture

A Monograph

by

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Service culture affects how military branches organize, train, equip, and survive as separate institutions of the US military. The culture of a service includes the persistent, patterned way of thinking about operations and relationships. The population of a particular service will identify with a common mission, capability, and or ethos, thus forming a cohesive culture. Air Force culture is centered upon the idea that advanced technology enables the service to be a decisive contributor to warfare from the air domain. In order to stay relevant to current military requirements, services are faced with the challenge of either re-organizing or directing a major change in practices, or both. Once the service initiates the change, the service culture's response is a direct contributor to whether or not the change will be successful. This is a major change in practices, and goes against the current service culture that has, since before its inception as an independent institution, fostered a technology biased ethos.
This monograph asks how the Air Force can successfully enable the necessary cultural change that will have to accompany a successful transition to low-tech propeller driven strike aircraft. The hypothesis is that senior service leaders must influence cultural change so that it evolves in the desired direction.

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Abstract

Bringing Back the Past: The Impact of Procuring Low-Tech Strike Assets on Air Force Culture by Major David A. Ferguson, US Air Force, 43 pages.

Service culture affects how military branches organize, train, equip, and survive as separate institutions of the US military. The culture of a service includes the persistent, patterned way of thinking about operations and relationships. The population of a particular service will identify with a common mission, capability, and or ethos, thus forming a cohesive culture. Air Force culture is centered upon the idea that advanced technology enables the service to be a decisive contributor to warfare from the air domain. In order to stay relevant to current military requirements, services are faced with the challenge of either re-organizing or directing a major change in practices, or both. Once the service initiates the change, the service culture's response is a direct contributor to whether or not the change will be successful. The US Air Force is considering procuring propeller-driven aircraft to conduct strike operations. This is a major change in practices, and goes against the current service culture that has, since before its inception as an independent institution, fostered a technology biased ethos.

There are historic examples that illustrate how service cultures rejected the institution's proposal to re-organize or initiate a major change in practices. During Vietnam the Army culture resisted transformation to deal with counterinsurgency due to organizational and material costs. There are also historic examples that demonstrate how cultural buy-in from the institution allowed a major change to occur. The methodology for this monograph analyzes two such case studies. The first case study is the Army Transformation that was initiated by General Shinseki in 1999 and is still ongoing. The second case study analyzes the Marine Corps' decision to resurrect the amphibious assault mission during the interwar period. Both case studies are examples of how Army and Marine leaders influenced their service culture to adopt a major re-organization and a significant change to operational mission and capability.

This monograph asks how the Air Force can successfully enable the necessary cultural change that will have to accompany a successful transition to low-tech propeller driven strike aircraft. The hypothesis is that senior service leaders must influence cultural change so that it evolves in the desired direction. A major change in practices must be accompanied by a change in the service's patterned way of thinking. The institutional culture will reject the change, remain ambivalent, or accept that low tech solutions can be a better solution to required capability. Ultimately, the service culture will determine if the change in practices is successful.

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Chapter 1: Introduction

> The form of any war – and it is the form which is of primary interest to men of war – depends upon the technical means of war available.
>
> - Giulio Douhet, *The Command of the Air*

Service culture affects how military branches organize, train, equip, lobby for resources, and survive as separate military institutions. The culture of a service includes the persistent, patterned way of thinking about operations and relationships.[1] The population of a particular service will identify with a common mission, capability, and or ethos, thus forming a cohesive culture. Air Force culture is centered upon the idea that advanced technology enables the service to be a decisive contributor to warfare from the air domain. As Douhet notes, this culture has been cultivated since the airplane emerged as a revolutionary technology, long before the United States Air Force became an independent service.

The Air Force has, until very recently, continued to foster a technology-biased ethos. In a constant pursuit of advanced technology, the service has maintained a discourse which justifies the idea that next generation aircraft and weapons are essential to national security. A pattern that defines Air Force culture is evident in the procurement evolution from propeller driven aircraft to those equipped with jet engines, variable-geometry wings, and low observable designs. Weapons present a similar pattern – unguided bombs gave way to munitions guided by laser and space-based navigation systems, capable of being launched from a considerable standoff distance. When it comes to favoring the latest technology, the culture of America's Air Force is no different than any other nation's equivalent service. Historically, all air forces have leaned towards procuring the most advanced weapons systems that their defense budgets would allow. The difference is that America has always had the fiscal resources to maintain a fleet of the most technologically advanced aircraft in the world, while the majority of the world's air forces make do with what their defense budgets will accommodate. Simply put, the service is defined by ownership of advanced technology. When one thinks of today's Air Force, it is the F-22 or B-2 that comes to mind, not a P-51 Mustang.

Over the past decade, however, the Air Force has changed its vector. This shift was first evident when the service decided to procure inexpensive propeller-driven aircraft to perform surveillance and other non-strike roles. The Secretary of Defense and the Chief of Staff of the Air Force have suggested that the service should consider procuring propeller driven strike platforms as well. This paper asks how the Air Force can successfully enable the necessary cultural change that will have to accompany a transition to low-tech propeller driven strike aircraft. To test the hypothesis that a cultural change in the desired direction must be influenced

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[1] James Wilson, *Bureaucracy: What Government Agencies Do And Why They Do It* (New York, N.Y.: Basic Books, 1991), 91.

by senior service leaders, this monograph examines how Air Force culture developed into one that is techno-centric, beginning with the earliest advocates of airpower. Next, two case studies examine the how Army and Marine culture were affected by a significant shift in practices, and the role that leadership played in influencing the resulting culture changes. Finally, the conclusion addresses why it is important for the Air Force to acknowledge that the procurement of propeller driven strike aircraft will likely cause a change in culture.

Following the introduction, Chapter Two examines in brief detail the evolution of Air Force culture, since before its creation as a separate service up to 2003. The study is bounded on the right by 2003 because that is the last time the Air Force engaged in major combat operations requiring extensive employment of high-tech assets. After the brief air campaign that destroyed Saddam's offensive military capability, the Air Force found itself engaged in an irregular warfare scenario, similar to the conditions, from an airman's perspective, to those found in Afghanistan. The Air Force, not unlike the other military branches, is adjusting to meet the challenges of irregular warfare. To meet these challenges, the service has already procured *new* propeller driven airplanes, such as the MC-12 and U-28A, which are employed primarily as reconnaissance assets.[2] Additionally, the Air Force is giving serious consideration to procuring propeller driven strike platforms.[3] It is this shift from high tech to relatively low tech weapons systems, and the associated cultural impact, that defines the focus of the research effort for this monograph.

Chapter Three examines the effects that the Army's transformation has had on that service's culture. The case study looks specifically at the change from division-sized fighting units to more expeditionary modular forces, as proposed in 2004 by then Army Chief of Staff General Peter Schoomaker. It is not a major leap to assert that this ongoing transformation has impacted Army culture, since the Army Transformation Roadmap lists "transformed culture" as one of the three components of the transformation strategy.[4] Although the overall strategy includes more than a change in the organization of war-fighting units, this case study focuses on this particular piece of the transformation, as its cultural impacts are already apparent in the Army. This monograph examines the resultant cultural shift in the Army in order to determine if corollary effects can be predicted for the Air Force.

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[2] "Us Air Force Official Website," MC-12, http://www.af.mil/information/factsheets/factsheet.asp?fsID=15202 (accessed December 1, 2010). Note the recent date of procurement of the MC-12 in the section labeled "Background." The MC-12 is one of a couple of types of propeller driven reconnaissance type aircraft recently acquired by the Air Force.

[3] Robert Dorr, "Reserve Component Test Pilots Wring Out Aircraft," *Defense Media Network*, November 10, 2010. http://www.defensemedianetwork.com/stories/reserve-component-test-pilots-wring-out-aircraft/ (accessed December 1, 2010). The date of the test conducted with an AT-6C (October 5, 2010) indicates that the Air Force is still considering acquiring this platform as a low-cost strike aircraft, trainer, or both.

[4] "United States Army 2004 Army Transformation Roadmap," *Office of the Deputy Chief of Staff, US Army Operations, Army Transformation Office* (2004): viii.

Chapter Four will shift further back in history to analyze the cultural influences upon the Marine Corps as a result of a major change in the service's mission. The case study will examine the early twentieth century transition of the Corps' mission from existing as primarily an embarked fighting force or land based infantry to an expeditionary amphibious assault force. The study focuses on how the Corps' mission evolved from protecting naval vessels and ports to an autonomous amphibious assault force, capable of conducting ship-to-shore operations once disembarked. The amphibious mission is a significant departure from the Corps' World War I operations, in which they were used as land-based infantry much like the Army. This evolution occurred over several decades; however, the period in which the amphibious mission began to solidify as the capstone role for the service occurred during the interwar years under the guidance of Holland Smith and John Lejeune. Following World War I, Lejeune realized that if the Marines were continued to be used as infantry without having a distinct mission, they would be absorbed by the Army.[5] The interwar period through World War II provides the boundaries of examination of the actual change in mission and the resultant cultural shift in the service. The Army transformation occurred as a result of a perceived need to remain relevant in an ongoing conflict, whereas the Marine Corps transition was based upon the need to establish a unique identity in order to remain an independent service.[6] The basis for change for these two services provides an interesting contrast from which distinct cultural changes emerged. The Air Force's shift in focus falls somewhere in between the Army and Corps' transitions, therefore, the resultant cultural variation in the Air Force should contain some characteristics similar to both the Army and Marine Corps cultural changes.

Chapter Five synthesizes the results of the case studies and explores how procuring propeller-driven strike aircraft will generate a shift in Air Force culture. The employment of these low-cost, relatively simple to operate platforms immediately hint at two possible deviations from current Air Force culture. First, the proposed roles of these aircraft include light attack and reconnaissance (LAAR) in direct support of the ground commander (as well as law enforcement and drug interdiction). It follows from these roles that "penny packets" of LAAR will be made available to ground commanders, resulting in highly decentralized control of Air Force strike assets. This assertion is based upon the already highly decentralized nature of remotely piloted vehicles and the MC-12W Liberty, currently used for intelligence, surveillance, and reconnaissance applications. The key difference, and thus an identifiable shift in the Air Force's patterned way of thinking about operations, is the highly decentralized control of *strike* assets.

A second deviation results from an apparent willingness on the part of the Air Force to operate more frequently within the opponent's effective small to medium surface to air weapons employment zone. Advanced technology has enabled the Air Force to procure systems that allow

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[5] Robert Heinl, *Soldiers of the Sea: The United States Marine Corps, 1775-1962* (Baltimore: The Nautical and Aviation Publishing Company of America, 1991), 232.

[6] Leo Daugherty III, *Pioneers of Amphibious Warfare, 1898-1945* (Jefferson: McFarland and Company, 2009), 186.

for standoff capability. When matched with precision munitions, the service culture has evolved into one which advocates "clean" warfare, in which aircraft and aircrew survivability, along with the avoidance of collateral damage, are principle factors that are considered before committing air power to the fight. The currently employed MC-12W, and both the Super Tucano and AT-6B indicate a reversal of this evolution, as they will frequently operate within the threat envelope of surface to air munitions. The final section also reviews the central theme, argument, and conclusions of the research. This chapter also discusses the implications of cultural change on the future organization, equipping, and training for the Air Force, as well as future employment of air power. If the Air Force procures low tech strike aircraft, airmen will have to accept or reject three changes in practices that could result in a cultural paradigm shift.

The first change in practice is that of favoring low tech aircraft that are arguably a better match in capability in irregular warfare. Proponents of low tech over high tech strike aircraft assert that these assets provide increased loitering capability, and the ability to operate from smaller airfields closer to the ground commanders' operating bases, which equates to a faster response to the ground commanders' requirements. This is counter to the service's predominate mindset that prefers cutting edge technology. The second change in practice is the decentralization of strike assets to the point that they could be directly allocated to ground commanders. Again, this practice is counter to the service's history of maintaining direct control over strike aircraft. Finally, strike aircraft operating within the effective range of small and medium surface to air weapons goes against the current preference of utilizing technology to avoid surface to air threats. Having outlined the logic and flow of this research effort, the stage is set for an examination of the history of Air Force culture.

Chapter 2: Air Force Culture Pre-1903 through 2003

Air Force culture, as in any institution, consists of a uniform set of beliefs which are translated into practices. For the Air Force in particular, this uniform set of beliefs is historically based on placing a premium on cutting edge technology, which began with the airplane and has evolved into ever advancing aircraft, weapons, and space assets. Carl Builder describes this culture as "understanding, nurturing, and applying technology."[7] Belief in the importance of technology leads to service practices. The ever present pursuit of advanced technology influences what types of platforms and weapons the service procures, as well as how the service writes doctrine and employs tactics. The practice of being able to employ cutting edge technology in the nation's wars ensures that the Air Force will remain relevant in the future.[8] As a result of this cultural perspective, the Air Force views itself as the steward of the air domain, the domain from which the service believes decisive warfare can be conducted. This cultural perspective is reflected throughout the Air Force's history. The major shaping influences of Air Force culture throughout the service's history include the Industrial Warfare Revolution, both World Wars, the development of nuclear weapons, and Desert Storm.

The airplane rapidly evolved from a novice invention in 1903 to a weapon used in combat eight years later in the Italo-Turkish War.[9] Early aviation theorists such as Giulio Douhet, Hugh Trenchard, and William Mitchell soon realized the significant impact that technology would have on the development and employment of airpower. These air strategist pioneers were undoubtedly influenced by the rapidly changing tactics and technology of the period of industrial warfare. Railways allowed commanders to disperse large numbers of troops using exterior lines, while the telegraph enabled effective control. Prior to the invention of airplanes, Helmuth von Moltke was utilizing emerging technology to exploit space and movement in the land domain, but still within the limits of a two-dimensional battlefield.[10] By World War I, the advanced tactics applied to the two-dimensional battlefield evolved into massive land forces engaged in defensive stalemates. The airplane held promise as a technology that could overcome these stalemates known as trench warfare. The most devout interwar proponents of air power claimed that the airplane would not only make bloody stalemates obsolete, but would also dominate warfare and be the decisive instrument in winning future wars. Airmen believed that this could be accomplished by the application of innovative, scientifically based tactics to new technology in the form of attacking over the trenches with airplanes to

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[7] Carl Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: The Johns Hopkins University Press, 1989), 19.

[8] Ibid., 19-20.

[9] Stephen Bull, *Encyclopedia of Military Technology and Innovation* (Westport: Greenwood Publishing Group, Inc, 2004), 7.

[10] Gordon Alexander Craig, *The Battle of Koniggratz;: Prussia's victory over Austria, 1866 (Great battles of history)* (Westport: Greenwood Press, 1964), xi, 70-72.

disrupt the enemy's rear echelons. Airpower would break the stalemate, allowing ground forces to conduct offensive warfare.

The importance of imbedding scientific principles into air power theory is still evident today in the form of tactics which are built around precise mathematical formulas. Douhet himself included mathematical formulas in his comprehensive air power theory, *The Command of the Air*, which specified the number of bombs to drop on a particular target to guarantee destruction.[11] In July 1921, William Mitchell demonstrated the practical effects of Douhet's theory. Dropping 2,000 pound bombs especially designed for use against surface vessels, his Martin bombers sank the German battleship *Ostfriesland* within twenty-one minutes during an air to surface ordnance test.[12] Regardless of Mitchell's true motives for conducting the test, the successful sinking of a battleship by airplanes received widespread publicity, further endearing airmen to their technology.

Except during the very early stages of the development of air power, this new capability did not have to endure the clash of applying new technology to legacy warfare tactics. When Moltke incorporated the railway and telegraph to spread out his forces using exterior lines, his practices were in direct conflict with Jomini's existing interior lines theory. As a result, field commanders within Moltke's own armies disagreed with his application of technology to tactics on the battlefield.[13] The disagreement continued both in Europe and in the United States until World War I. In contrast, when the airplane was invented, air to air, air to surface, and surface to air combat tactics did not exist. The new technology necessarily required new tactics, each fully dependent on the other. Thus, a belief emerged within the air branches of the militaries that tactics could never be separated from technology.

Although in the United States the airplane made its humble debut as a combat capability in the Signal Corps, both pilots and ground commanders soon realized the relationship between the technologically advanced machine and tactics. The practice of matching scientific principles and formulas with technology and tactics soon found its way into early Army doctrine. In the mid-1920s through the 1930s, the Air Corps Tactical School (ACTS) continued with Douhet's mechanistic approach to air warfare. During these years, the use of airpower was still considered by many to be an extension of the ground effort. Airmen reflected on the results of World War I and began to study the effectiveness of mass formations to halt a ground enemy's advance. However, during this time another school of thought began to form, gaining traction from its chief advocate, William Mitchell. The divergent thinkers still recognized the utility of airpower as a complement to mechanized warfare; however, they began to place more emphasis on its

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[11] Giulio Douhet, *The Command of the Air* (New York: Coward-McCann, 1942), 36.

[12] Bernard Nalty, *Winged Shield, Winged Sword: A History of the United States Air Force* (Washington DC: Air Force History and Museums Programs, 1997), 94.

[13] Craig, xi-xii.

unique capability to conduct strategic attacks deep inside the enemy's borders.[14] This is a very significant concept, as it illustrates how airmen, from very early on during the development of airpower, resisted any attempt to restrict technology to a specific application or circumstance, such as a mere extension of ground maneuver. They were peering over the horizon, considering how airpower could address combat problems not yet resolved by sea or land capabilities.

The bombardment doctrine developed by ACTS instructors depended upon a scientific analysis to identify vital targets that would destroy an opponent's economy and morale. According to ACTS, the destruction of large area targets, such as industrial centers, could be addressed by bomber formations. This concept was generally accepted by the War Department and Congress, and greatly affected the number of aircraft and bombs produced leading up to World War II.[15] From late 1939 to late 1941, the B-17 inventory increased tenfold, and by 1944, aircraft production in the United States increased almost forty five times the pre-war rate.[16] Thus, the procurement of new equipment was influenced by the dominant set of beliefs and practices *(culture)* of how to employ *(tactics)* the airplane *(technology)*.

Further development of the ACTS bombardment strategies is found in the Air War Plans Division I (AWPD-I), drafted in 1941. Like the ACTS instructors, AWPD-I directed that the opponent's war-making capacity should be identified by scientific analysis.[17] The air bombardment strategy relied on a technology centric approach to identify targets and select munitions and tactics. As bombardment strategy and technology continued to advance, a belief emerged that airpower could be so destructive that it would change the dominant form of warfare. This theory was tested over Germany, and arguably even confirmed over Japan in World War II.

Building upon the efforts of the ACTS, early airpower theorists such as Douhet, and early advocates such as Mitchell, the Army Air Force was ready by World War II to assert itself as capable of ending Germany's ability and resolve to continue hostilities. Strategic bombing was employed to bring about the rapid downfall of the aggressors in Europe, and deter the Japanese from further aggression in the Pacific. However, neither aircraft technology nor tactics were quite up to the standards required to support such claims. While there were tactical successes delivered by airplanes, neither the technology nor time required to bring about the end of the war were congruent with airpower advocates' assertions until late 1944 and through 1945. The airplane's "decisive" capability as promised by airmen was in serious question, a doubt that has to some degree lingered ever since. Although airmen's core beliefs about the necessity of pursuing

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[14] Neville Brown, *The Future of Airpower* (New York: Holmes and Meier Publishers, Inc, 1986), 5.

[15] John J. Buckley, *Air Power in the Age of Total War* (Bloomington, Ind.: Indiana University Press, 1999), 138-42.

[16] Nalty, 174.

[17] Barry Watts, *The Foundations of US Air Doctrine: The Problem of Friction in War* (Maxwell Air Force Base: Air University Press, 1984), 18.

advanced technology for employment in future wars was not destroyed, they were severely shaken at the conclusion of World War II.

The great anomaly concerning the effectiveness of airpower during World War II was the dropping of atomic bombs. Although some continued to doubt airpower's decisive role in war, there was a significant shift in attitudes after Hiroshima and Nagasaki. Policy makers could not overlook the role that the airplane played in Japan's surrender. Airmen championed the end of the war as a result of the marriage of tactics to the ultimate technology of the day – nuclear weapons, which were delivered by airplanes. This technological breakthrough had a profound impact on the way airmen thought about the employment of airpower, as it compressed the time frame needed to implement Douhet's theory of destroying the opponent's capacity and will. Military strategist Bernard Brodie claimed "Since time has rescued him [Douhet] from his first and gravest error-his gross overestimate of physical effects per ton of bomb dropped – by introducing the nuclear bomb, Douhet's thoughts are for any unlimited war more valid today than they were during his lifetime or during World War II."[18]

By 1944 air superiority was achieved over Europe, and high altitude daylight precision bombing began to affect the destruction of Germany.[19] While it certainly could not be said that airpower alone ended the war, as many advocates advertised several years earlier, the late successes in Europe and the Pacific, combined with the nuclear bombing of Japan, provided airmen with the motivation to renew efforts to lobby for an independent air force. By this time there was a sub-culture of airmen who wore an Army uniform. As the belief in the necessity for advanced airplanes that could be employed with strategic effects independent from the land forces gained traction, airmen concluded that their culture was quite different from that of the Army. Henry Arnold, Commanding General, Army Air Forces, was the most influential spokesperson after the war for a separate institution. General Arnold's habit of envisioning the future landscape of airpower had an everlasting impact on the way airmen think about emerging and future technology. Well before the establishment of the Air Force as an independent service, the dominant institutional concepts and culture of airmen had been firmly established by early pioneers such as Mitchell and Arnold.

Before the end of World War II, General Arnold held a meeting with his staff and veteran pilots and proclaimed that the engineers that design radical new weapons would shape the air force more than pilots themselves.[20] After the war the general prophesied the development of guided missiles, target-seeking antiaircraft missiles, and unpiloted aircraft moving faster than the

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[18] Bernard Brodie, *Strategy in the Missile Age* (Princeton: Princeton University Press, 1959), 73, quoted in Barry Watts, *The Foundations of US Air Doctrine: The Problem of Friction in War* (Maxwell Air Force Base: Air University Press, 1984), 27.

[19] Nalty, 312.

[20] Bernard Nalty, *Winged Shield, Winged Sword: A History of the United States Air Force* (Washington DC: Air Force History and Museums Programs, 1997), 372.

speed of sound.[21] His core argument regarding the use of airpower, however, was unchanged. Arnold maintained that new technology would inform the strategic bombing mission of destroying the enemy's war-making industry. Arnold's message was different from those who associated strategic airpower exclusively with the delivery of nuclear weapons. This would prove to be important, as Arnold's vision of an independent service still required aircraft in large numbers to execute conventional wartime missions. Although President Truman created the Department of the Air Force in 1947, the problem of how to separate the Air Force's identity from being associated primarily with the delivery of nuclear weapons would linger well after the service achieved independence. A decade later, General Curtis LeMay realized that the service's stewardship of intercontinental ballistic missiles was a definite change in the Air Force's primary mission of flying airplanes, and he protested the notion of turning bomber pilots into "the silent silo-sitters of the 60s."[22] Eventually, cruise missiles became a joint Air Force – Navy endeavor, without significant impacting the sea supremacy image of the Navy or the air superiority image of the Air Force. The way the Air Force handled the cruise missile is evidence of Builder's "engines of stability," in which the service population tends to reject new developments that intrude on established self-image and culture.[23]

In the forty-five years spanning from the end of World War II to the beginning of the air campaign in Desert Storm, there were significant technological developments, but relatively few personalities or events impacted Air Force culture to the same degree of Mitchell following the Great War and Arnold following World War II. Although the jet was a major new technology employed by a relatively new Air Force in the Korean War, for various reasons, including political restrictions, it failed to produce decisive victory. During World War II, "air superiority" was a concept well known by airmen that was best achieved not by dogfighting, but by the attrition of enemy aircraft on the ground. Due to restrictions, enemy bases in the northern part of North Korea and Manchuria were not destroyed. As a result, there was a steady flow of enemy fighters, resulting in only temporary air superiority over limited locations.[24]

Vietnam yielded similar results. Precision guided munitions were the advanced technology, and night, high altitude radar bombing, along with sophisticated jamming, were the tactics married to this innovative technology. As in Korea, however, and for many of the same reasons, airpower did not produce a decisive victory. In many ways both Korea and Vietnam resembled World War II in that the effectiveness of airpower was most pronounced during the last year of hostilities, but without the grand finale of the atomic bomb. Therefore, although there

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[21] Ibid., 373.

[22] Carl Builder, *The Icarus Syndrome: The Role of Airpower in the Evolution and Fate of the U.S. Air Force* (New Brunswick: Transaction Publishers, 1994), 200.

[23] Builder, *The Masks of War: American Military Styles in Strategy and Analysis*, 43.

[24] Benjamin Franklin Cooling, *Case Studies in the Achievement of Air Superiority - Special Studies*, No Edition Stated ed. (Washington DC: Center for Air Force History, 1994), 453-55.

were significant emerging technologies and tactics during these years, the culture was still tied to Mitchell, Arnold, and a World War II victory.

From an airman's perspective, Desert Storm would change all of this, thanks largely to the Instant Thunder campaign. What began as a meager plan to invade Iraq with a single Army corps was transformed by air planners into a massive strategic aerial assault that paved the way for the ground invasion. New iconic airmen emerged from the air campaign's overwhelming success. Arnold and Mitchell passed the torch to John Warden and Charles Horner. Colonel Warden was the campaign's architect, building a doctrine founded upon combining advanced technology with tactics. Warden's famous five rings consisting of a state's leadership, key production, infrastructure, population, and fielded military forces were used as a model to employ air power in Iraq.[25] Lieutenant General Horner, who was the Combined Forces Air Component Commander, convinced the Joint Forces Commander that Warden's plan (with a few notable modifications) was a viable and critical component of the overall campaign.[26] The Instant Thunder campaign utilized the most advanced technology of that era in the form of stealth platforms and precision guided munitions.

Although General Horner executed what is widely regarded as the most successful air campaign in history, it is Colonel Warden whose legacy endures as the mastermind behind a brilliant airpower theory. The relevance of Colonel Warden emerging as an iconic airman in the aftermath of Desert Storm is that his airpower theory advanced an Air Force culture that was in keeping with Mitchell, Arnold, and even Douhet's assertions that advanced technology is the key to employing airpower with maximum effectiveness. Prior to Warden's development of the offensive air campaign, the existing air operational plan was based on defending the Arabian Peninsula, in keeping with AirLand Battle. AirLand Battle asserted that while the Air Force would conduct strategic attack, the service would remain in a supporting role to the ground efforts.[27] In effect, Warden resurrected Douhet, Mitchell, and Arnold, who proclaimed that advanced technology should be matched with the basic tenets of the strategic attack paradigm to use airpower as an offensive capability. Instant Thunder was not a plan to "point the fire hose" of airpower where the ground commander thought invading forces would attack, as the AirLand Battle-centric plan called for. Although Colonel Warden introduced the concept of the "five rings," his concept was remarkably similar to the strategic bombing campaigns used in World War II and towards the end of the Vietnam War. A key difference between Desert Storm and the

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[25] Richard Reynolds, *Heart of the Storm: The Genesis of the Air Campaign Against Iraq* (Maxwell Air Force Base: Air University Press, 1995), 17.

[26] Ibid., 122-130. Colonel Warden did not share General Horner's concerns about the threat of Iraqi tanks crossing into Saudi Arabia. Reynolds asserts that Horner's focus was at the tactical level of war, while Warden was attempting to sell a strategic air campaign. Although Instant Thunder was executed, Horner modified the plan to include defensive measures to address any southern movement by the Iraqi Army.

[27] Edward C. Mann, *Thunder and Lightning : Desert Storm and the Airpower Debates, Volume II* (Maxwell Air Force Base: Air University Press, 1995), 21, 29-30.

Korean and Vietnam Wars was the strategic endorsement of Warden's plan by Washington DC to relentlessly apply airpower to paralyze Iraq's offensive capability. The Instant Thunder air campaign was not a Rolling Thunder escalation scenario, and there were no planned strategic pauses once it began.

As a result of the success of the air campaign in Desert Storm, the Air Force enjoyed a renewed acknowledgement of the legitimacy of strategic bombing, conducted by the most advanced platforms and weapons of the era. Operation Allied Force, conducted in 1999, further boosted the Air Force's image, as airpower was the dominant military means employed in order to halt Yugoslavia's aggression in the Balkans. The B-2 bomber made its combat debut in this campaign, reflecting a persistent presence of advanced technology whenever the Air Force showed up to a war. Although a debate still remains as to whether or not airpower was the decisive reason for Slobodan Milosevic's capitulation, the fact that there was never a NATO ground invasion is considered a win for the continuation of the Air Force culture.[28]

The initial air campaign conducted in Operation Iraqi Freedom was conducted without notable deviation from the strategic bombing paradigm. Although a short air campaign plan allowed ground forces to achieve surprise in their initial attack, the brief but intense effort was the employment of airpower from the perspective of Warden's five rings. [29] Conventional military operations, both in the air and on the ground, eliminated the threat posed by the professional militaries of Hussein and the Taliban. As a result, both Operations Iraqi Freedom and Enduring Freedom have developed into lingering irregular warfare campaigns following the brief application of strategic airpower. It is in this era of irregular warfare where a difference is found, both in the application of airpower, and a shift in the service's focus from strategic bombing and attack to tactical air support and airlift. The procurement of propeller driven assets during this era, such as the MC-12 and U-28A is further evidence of a shift in focus from high end platforms to significantly lower-tech assets.

The first waves of change within service culture occurred when the Air Force procured several new reconnaissance platforms that were propeller driven, during the period when the number of F-22 fighters to be procured dwindled from 381 to 187. Advocates of these low-tech reconnaissance assets claim that they deliver effective capability when matched against requirements occurring in irregular warfare. Specifically, they meet the requirement to operate aircraft from small airfields co-located with ground troops, which enables airmen and aircraft to plan and operate with their ground counterparts. Although primarily used as special operations airlift, the V-22 Osprey is another example of a recently procured propeller driven platform. Some variants of the V-22 have kinetic offensive capability in the form of a mini gun or .50

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[28] Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment (Project Air Force Series on Operation Allied Force)* (Santa Monica, CA.: RAND Corporation, 2001), xiv-xv.

[29] Gregory Fontenot, E. Degan and David Tohn, *On Point: the United States Army in Operation Iraqi Freedom* (Annapolis: Naval Institute Press, 2005), 94.

caliber machine gun, but they are currently used in a defensive role. The Air Force is poised to take it one step further, by considering the procurement of propeller driven *strike* aircraft. The argument goes that low-tech strike aircraft will deliver more capability than jet-powered advanced strike platforms when employed in the current irregular warfare environments. This is a root change in the Air Force's prevalent attitude that advanced technology equals the most effective airpower capability. In order to build upon the assertion that the resulting cultural change must be addressed by Air Force leaders, we now look at a significant transformation which occurred in the Army. This change was based along the same premise: irregular warfare calls for a different organizational structure and capability than that required in the Cold War and Desert Storm.

Chapter 3: Case Study: Army Transformation: 1999-Present

> The magnificent army that fought in Desert Storm is a great army, and it still is a magnificent army today. But it was one we designed for the Cold War, and the Cold War has been over for ten years now.
>
> - General Eric Shinseki, *Interview with PBS Frontline*

The Army has evolved through a major organizational transformation initiated in 1999 by then Army Chief of Staff, General Eric Shinseki. Even before the service entered the irregular conflicts that it finds itself in today, General Shinseki questioned the relevance of the Army, much like Major General Lejeune asking the same question about his Marine Corps in 1920, contributing to a major operational change in that service. (The effects that the Corps' shift to focusing on amphibious assault had on Marine culture will be discussed in the next chapter). Shinseki's vision was to shift from a service that was comfortable with being organizationally structured to participate in major land battles, primarily in the European theater, to one that was more responsive to regional crisis. To put it another way, he recognized that the Army had to be organized to fight facing 360 degrees as opposed to a linear forward movement across a relatively static front. The Army that General Shinseki inherited was basically a two dimensional relic, leftover from the Cold War era. There were heavy units with plenty of combat power but poor strategic responsiveness and light units with greater response but less combat power.[30] There had been earlier attempts, especially after Vietnam, to shape the Army into a more expeditionary service. Although *Force XXI Operations* in 1993 called for globally deployable forces and imaginative combinations of technology, not much resulted from this plan in the form of organizational or equipment modifications in the Army.[31] The plan that General Shinseki presented to Congress called for a major transformation of forces over a thirty year period. Modularity was the vehicle that the Chief proposed to transform the Army into an agile force able to operate across the spectrum, from combat to stability operations. General Shinseki's proposal was approved by incoming Secretary of Defense Donald Rumsfeld, who also envisioned a transformed military that was capability based instead of threat based.[32] Early buy-in from civilian leadership undoubtedly helped smooth the trail of transformation for the Army.

There are two important characteristics of Shinseki's proposed transformation worth discussing further. First, in his address to Congress in March, 2000, he hinted at the importance

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[30] Rick King, "Army Transformation: A Cultural Change" (master's thesis, Army War College, 2008), 2.

[31] John L. Romjue, *American Army Doctrine for the Post-Cold War* (Washington DC: University Press of the Pacific, 2002), 135-40.

[32] Donald Rumsfeld, "Secretary Rumsfeld Speaks On 21st Century Transformation of Us Armed Forces," Defense.gov, http://www.defense.gov/speeches/speech.aspx?speechid=183 (accessed January 2, 2011).

of placing a *brigade* anywhere in the world within 96 hours. At this stage of the proposed transformation, the Army was still to be aligned to fight at the division level, with Shinseki proposing to have one division in theater within 120 hours, and five divisions in theater within 30 days. However, the second point that he addressed in his speech to Congress was the concept of the Interim Brigade Combat Team, with an "Interim Armored Vehicle."[33] This was the inaugural plan to merge the two-dimensional force into one that combined adequate combat power with rapid strategic responsiveness. This was also the beginning of a shift away from division-sized forces as the primary fighting unit of the Army. In his address, General Shinseki discussed the importance of leaders taking ownership of the transformation, but did not elaborate on the effects that transformation would have upon the culture of the forces. Interestingly enough, he urged Congress to support the transformation "…in a time of peace and prosperity," to avoid the difficulties that being engaged in a war would impose upon the process.[34] The next Army Chief of Staff would face the challenge of continued implementation of Shinseki's transformation while the Army was indeed engaged in war.

Shinseki's successor, General Peter Schoomaker, continued down his predecessor's transformational path. The 35th Army Chief of Staff came out of retirement and assumed responsibility of a service engaged in two major conflicts. By the time his 2004 Army Transformation Roadmap was released, General Schoomaker was planning to convert all active and reserve component maneuver brigades into the modular brigade combat teams.[35] Additionally, the concept of a division was adjusted to a headquarters element instead of a fighting unit. Each division could command and control up to six brigade combat teams. Under Schoomaker's watch, the Stryker replaced the Interim Armored Vehicle, and became a major component of the brigade combat team development concept. Heavy, infantry, and Stryker brigades make up the three combat fighting units that replaced division sized elements.

In 2003 the first Stryker brigade combat team deployed to combat, less than four years after conceptualization. According to the Transformation Roadmap the Stryker "[fills] the gap between light-and heavy-force units with an infantry-rich, mobile force that is strategically responsive."[36] This is the capability that General Shinseki envisioned in 1999. Eventually, the Stryker, originally slated as an interim measure to increase mobility and firepower in the modular brigade concept, evolved into an enduring weapon system still used today. The Stryker itself can be thought of as two vehicles; first, as the physical means that combines mobility and firepower

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[33] Erik E. Shinseki, "Statement By General Shinseki Before the Committee on Armed Services United States Senate," March 2000; available from http://armedservices.senate.gov/statemnt/2000/000308es.pdf; Internet; accessed 19 October 2010, 6-8.

[34] Ibid., 10.

[35] "United States Army 2004 Army Transformation Roadmap," Office of the Deputy Chief of Staff, US Army Operations, Army Transformation Office (2004): viii.

[36] Ibid., 6-2.

to a BCT, and second, as a conceptual vehicle that Army culture has accepted as a viable part of the solution to a two-dimensional land component.

General Schoomaker placed more emphasis on cultural change than his predecessor. In his Transformation Roadmap, he recognized the challenge that a change of mindset would have on his soldiers from thinking about set-piece enemies to operating as an expeditionary force.[37] One reason for Schoomaker's attentiveness to the cultural impact was that instead of planning for expeditionary engagements, his army was actively involved in two of them when he took over as Chief. As a result, he had real-world feedback on how the transformation was affecting Army culture while in engaged in combat. Operations in Afghanistan and Iraq did not slow the transformation process; instead, the Army moved up the timetable on several projects, such as the rapid fielding initiative, rapid equipping force programs, and network battle command. When one examines the total number of changes that have occurred in the Army in terms of organization and equipment during the past five or six years, it is truly remarkable that the service has embraced them without major objections. Thus far, it seems that General Shinseki was correct in his assertion that the transformation is the most significant in the Army in a hundred years.[38]

General Schoomaker's early attentiveness to cultural change accompanying organizational change is a major contributor to the success of Army transformation. He embraced the notion that organizing the service into modular fighting units would require a shift in cultural norms. Evidence of Schoomaker's recognition of this can be found in his Transformation Roadmap: "To realize the full power of transformation, the Army seeks to embed a culture of innovation within its people and organizations to ensure innovative practices, processes and activities emerge to produce required joint force capabilities."[39] In this statement the Chief states that a culture change is required, and he provides broad guidance on the components that make up the shift. The shift is from a culture that is comfortable with post-Cold War capabilities to one that promotes innovation and critiques the status-quo. Additionally, Schoomaker ties a desired end state to the cultural shift and resultant processes – he asserts that the service will be better postured to support joint endeavors.

Although General Schoomaker articulated in general terms what the culture change would look like, he did not stop there. One more quote from his Transformation Roadmap illustrates Schoomaker's forethought as to how the momentum for cultural change would begin: "Cultural change of an institution begins with the behavior of its people — and leaders shape behavior. The leadership challenge is to remove the impediments to institutional innovation through a wide range of behaviors that, over time, produce a culture that embraces

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[37] Ibid., 1-2.

[38] Shinseki, "Statement By General Shinseki Before the Committee on Armed Services United States Senate," March 2000, 9.

[39] "United States Army 2004 Army Transformation Roadmap, 2004, 1-4.

transformation."[40] The Chief acknowledged that the culture of the *institution* must be changed, and that leaders will be out in front clearing away the obstacles that impede or slow the progress of cultural change. Finally, Schoomaker admitted up front that the change will take time. This might be the most critical piece of Schoomaker's vision, as it allowed for gradual acceptance of new processes and reduces the tendencies for disappointment and discouragement if the institutional cultural changes do not quite keep pace with the re-organization of the service.

Since Schoomaker's 2004 Transformation Roadmap, there has been continued discourse within the Army over both the importance of cultural change, and whether or not this change is occurring. There has been much written on "gaps" between observed and desired institutional cultural transformation.[41] Emphasis is placed on innovative leadership and processes, and the difficulties associated with overcoming impediments to these traits and processes in an organization as large as the Army. In 2007 one senior Army officer noted that there were lingering cultural obstacles that act as barriers to change against innovative leadership, such a lack of innovative leaders that are not fettered with by-the-book and by-the-number processes. The officer suggests that those promoted to the highest ranks are the imaginative and intellectuals who can support innovation. To put it another way, transformation of the service requires transformational leaders.[42] The 2004 Transformation Roadmap indicates that the Army recognized from the beginning the importance of leaders monitoring the progress of cultural adaptation.[43]

Following Shinseki's lead, General Schoomaker decided to bring the subject of cultural change to the forefront of the transformation process, in spite of a lack of universal support. In 2004, retired Colonel Douglas Macgregor testified before Congress that the Stryker vehicle was not the correct match for desired capability, and that the entire brigade combat team concept was a flawed approach.[44] The dissenting views of Macgregor and others did not dissuade General Schoomaker from publicly embracing the cultural change that the transformation would generate. If the Chief chose not to address this issue and direct Army leadership to guide the change, the

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[40] Ibid., 1-4.

[41] For accounts of observed verses desired institutional transformation, see John Brown, "War, Peace and Army Transformation," *Army* 59, no. 7 (July 2009): 86-87; Charles Driessnack, "Responding to the Call to Transform the Army Culture" (master's thesis, U.S. Army War College, 2003), 26; Martin Carpenter, "An Army Organizational Culture of Innovation: A Strategic Imperative For Transformation" (master's thesis, U.S. Army War College, 2006); and Mark Calhoun, "Complexity and Innovation: Army Transformation and the Reality of War" (master's thesis, School of Advanced Military Studies, 2004), 15-23.

[42] Peggy Combs, "US Army Cultural Obstacles to Transformational Leadership" (master's thesis, U.S. Army War College, 2007), 1.

[43] "United States Army 2004 Army Transformation Roadmap, 2004, 8-1.

[44] Douglas Macgregor, "Statement By Colonel (ret) Macgregor Before the Committee on Armed Services United States Senate," July 15, 2004; available from http://www.comw.org/pda/fulltext/0704macgregor.pdf; Internet; accessed 23 October 2010, 6-9.

entire transformation might have been adversely affected. The culture might have drifted into either one that was decidedly against modular brigade combat teams, or, an equally disastrous attitude of indifference towards the transformation. There was in fact a clear precedence for the Army resisting change; during Vietnam the service resisted transformation to deal with the counterinsurgency due to organizational and material costs.[45] The change did not have leadership buy-in, and consequently, the momentum required for a shift in service culture and practices never materialized.

Although the chapter is not yet complete on how re-organizing the Army from division sized fighting units to modular brigade combat teams has affected and will continue to affect the service's culture, there are distinct elements of this transformation that can be identified. Going back to Schoomaker's roadmap, it seems that several of his predictions and assertions are correct. The general recognized that a cultural shift was necessary to accompany the tangible organizational transformation.

This monograph asserts that the same is true for the Air Force: a move from acquiring high-tech strike platforms to low-tech options with proposed better suited capabilities indeed necessitates a cultural shift. Senior leaders must recognize that a cultural shift will occur, and they must lead-turn the shift by empowering service leadership with the authority to guide the institution in the desired direction. If the Air Force decides to procure low-tech strike aircraft, it is important that the service ties the desired cultural attitude to the transformation. In other words, the acknowledgment of cultural change should not lag the shift in practices, in this case, the procurement of propeller driven strike platforms. The other option is to allow the culture to develop freely, such as in the case of acquiring low-tech reconnaissance platforms. Although the Air Force has acquired these low-tech assets now for over a decade, there is little mention by leadership of any associated cultural change. If strike platforms follow the same pattern, the cultural shift will be more pronounced, and, if not addressed, the shift could self-vector in an undesired direction of either institutional rejection or apathy.

In the decade-plus since General Shinseki's proposed transformation of the Army, a cultural shift towards acceptance of modular organization has occurred. In the case of Army Transformation, a major change in practices was accompanied by a similar shift in the population's patterned way of thinking about the organization. The shift is not complete, and will continue to evolve as the transformation progresses. To further illustrate the impact of a major change in practices on a service's culture, we now look at a case study that presents the cultural shift which occurred in the Marine Corps when that service reinvigorated the amphibious assault mission.

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[45] Adam Stulberg and Michael Salomone, *Managing Defense Transformation: Agency, Culture, and Service Change* (Burlington: Ashgate Publishing Company, 2007), 154.

Chapter 4: Case Study: Marine Resurrection of Amphibious Assault

> If the Marines are abolished half the efficiency of the Navy will be destroyed. They are as necessary to the well being of a ship as the officers. Instead of decreasing the Corps, I would rather hope to see a large increase, for we feel the want of Marines very much.
>
> - Rear Admiral David Porter, *Letter to Commandant John Harris, 1863*

When a service initiates a major change to practices, there is an underlying reason, a "why." The reason is important, for if the change is to be culturally embraced by the service, it has to be bounded by legitimacy. For the Air Force, the reason to procure propeller powered strike aircraft is to match what is claimed to be a more capable and cost efficient platform to a distinct mission. For the Army, the reason for transformation was to create a force with greater strategic mobility without excessively sacrificing firepower. The reason the Marines resurrected the amphibious assault mission was to remain relevant and offer the War Department a capability that would distinguish themselves from the other services. The mission was temporally relevant in that it nested within the nation's shift towards expeditionary capability. Today, decades after the amphibious landings during World War II, the mission is so imbedded in the Marine culture that it is difficult to imagine a time when the service was struggling with its identity. Thus, since the interwar period, the Marines' patterned way of thinking about their organization is centered upon the amphibious assault mission.

Interestingly enough, the Marines could have chosen a mission other than amphibious assault to redefine their identity. American Marines trace their earliest roots to the American War for Independence. During this time ship commanders used Marines in the customary British manner: basically as soldiers that were used to fight aboard ships, and sometimes to guard outposts, with amphibious assault emerging as a mission some years later.[46] If one fast forwards to the interwar period following World War I, combined arms tactics were emerging and opening the door for the Marines to adopt airfield seizures as their primary mission. However, soldiers fighting aboard vessels eventually became an antiquated war fighting method, and airfield seizures, while somewhat unique, were still closely related to Army light infantry capabilities. Amphibious assault, during the time the Corps decided to resurrect this mission, turned out to be both relevant and unique. Relevance and uniqueness were the exact qualities the Marines were looking for in a new mission candidate during the interwar period.

Amphibious assault was a primary mission for the Marines during their early history following the American War for Independence. The Corps executed amphibious operations in

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[46] Allan Millett, *Semper Fidelis: History of the United States Marine Corps* (New York: Macmillan Publishing Company, 1980), 6.

the Indian, Mexican, and Spanish-American Wars. In the famous battle at Vera Cruz during the Mexican War, the Marines participated in the first US military joint large scale amphibious landing under General Winfield Scott.[47] However, following the Mexican and Spanish-American Wars, amphibious assault became a forgotten art for the Marines, largely due to external factors, such as America's progression from expansionism to isolationism and the tenets of the Monroe Doctrine.[48] Although the Corps was the premier expeditionary force of the US military, it was a service used for fighting on land in faraway locations. While the Corps deployed to the Philippines, the Dominican Republic, Haiti, and Nicaragua to fight small scale insurgencies, the primary concern among military strategists of the day was in figuring out how to defend a base against enemy attack, with no serious consideration of large-scale landings against heavily defended areas.[49] During these decades, the overall culture of the political and War Department organizations further subverted the Corps' cultural identity. There was significant demand for infantry, in all of its various forms. The Marines, along with the Army, were used to source the infantry requirement, thus, the two services developed similar patterns of thinking about their central tasks and organizations during this period.

Marine leadership during the interwar period following World War I realized that the Corps was being used as land based infantry, quite similar to the Army. Without a mission distinct from the Army, the Corps' relationship with the Navy also became confused. The Corps was organized under the Department of the Navy, but in practice was a subsidiary of the Army on the battlefield. Marine leaders recognized that the Corps' identity was in question, and that the service was at risk of becoming irrelevant. Lieutenant General Krulak later characterized this concern as "a sensitive paranoia," and notes that this attitude has remained prevalent in the Corps throughout its history.[50] In order to avoid being absorbed into the Army and Navy and to establish a culture unique to Marines, the service resurrected the amphibious assault mission in the two decades leading up to World War II.

Partially as a result of the Treaty of Versailles distributing former German island possessions to the Japanese, the strategic balance of power in the Pacific shifted at the conclusion of World War I.[51] The emergence of Japan as a potential adversary in the Pacific provided a great deal of validity to the Corps' efforts to bring back amphibious assault as their core mission. War Plan Orange, a key catalyst to the revival of the amphibious assault mission, specifically

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[47] Daugherty, 2.

[48] Walter McDougall, *Promised Land, Crusader State: The American Encounter with the World Since 1776* (Boston: Mariner Books, 1998), 203-6.

[49] Frank Hough, *Pearl Harbor to Guadalcanal. History of U.S. Marine Corps Operations in World War II. Vol. 1* (Washington DC: Government Printing Office, 1958), 8-9.

[50] Victor H. Krulak, *First to Fight: An Inside View of the U.S. Marine Corps* (Bluejacket Books) (Annapolis: US Naval Institute Press, 1999), 15.

[51] Ibid., 10.

called for establishing advanced bases in the Pacific.[52] In order to establish resupply bases in range of the fleet, the plan called for an island hopping campaign. A force was needed to seize and secure those islands occupied by the Japanese. Corps leaders such as Generals Smith, Williams, and Lejeune, would lean heavily on this war plan to legitimize their efforts to structure the service around amphibious operations. Marine leaders recognized that the world was changing, and the amphibious assault mission was a perfect fit in the offensive expeditionary warfare concept that the United States was adopting. Although a Transformational Roadmap was never issued, Corps leaders attempted to shape the culture so that the service population would converge towards a common sense of mission.

For a relatively small organization, the Marines have produced a disproportionate number of larger-than-life personalities when compared to the other services. Many of these personalities emerged in the early twentieth century and played a significant role in the development of amphibious doctrine and tactics. The combination of strong leaders and Washington's perceived developing threat in the Pacific set the inaugural conditions for a new mission to take shape in the Marine Corps. The distinct personalities of a few famous Marine visionaries during the interwar period undoubtedly influenced the service's cultural acceptance of the amphibious mission.

One of these personalities, Lieutenant General "Howling Mad" Smith, played a significant role in reviving the amphibious mission during the interwar period. Motivated by the desire to prevent the Japanese from seizing key bases in the Pacific, he spearheaded the Marine's efforts to create amphibious operational doctrine. Smith recognized that previous amphibious doctrine had atrophied, as a result of the Corps being used as land infantry for the past several decades.[53] Prior to Smith rededicating the Corps' efforts to develop amphibious doctrine, the services' capstone publication was the Small Wars Manual, finally published in 1935 after two decades of preparation.[54]

General Smith's decision to create new doctrine was important or two reasons. First, the doctrine presented the War Plan Orange designers with a solution to the advanced basing problem in the Pacific. The political and War Department patterns of thinking shifted from infantry-centric expeditionary operations to considering large scale offensive operations over the vast Pacific Theater. Both political leaders and the War Department realized that the Navy required advanced bases as coal and repair depots, placing the amphibious assault mission center stage if a conflict in the Pacific was to occur. Smith, along with a few other key Corps leaders, was able to match a distinct mission to the developing requirements that War Plan Orange mandated. His contributions to planning and doctrine enabled detailed guidelines for the tactics and techniques

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[52] Anne Cipriano Venzon, *From Whaleboats to Amphibious Warfare* (Westport: Praeger Publishers, 2003), 50.

[53] Daugherty, 50-55.

[54] *Manual for Small Wars Operations* (Quantico: Marine Corps Schools, 1935).

that would be developed for seizing an island base. Doctrine, tactics, and techniques were the seeds from which an emerging cultural identity and sense of mission would sprout.

Second, Smith was determined to unhitch his service from the Army and incorporate a new doctrine that incorporated amphibious warfare as the dominant role of the Marines.[55] Amphibious assault doctrine provided the War Department with a relevant mission, and provided the Corps with an identity separate from the Army. Smith eventually saw his efforts come to fruition when he was named Commanding General, Amphibious Corps, Pacific Fleet in October, 1942.[56] General Smith's success in creating amphibious assault doctrine was an important factor in legitimizing the service's transition to a new operating practice. This doctrine, which became canon for a mission unique from Army infantry, served essentially the same function as the Army Transformation Roadmap, in that it provided a vector in the desired direction of cultural development. In the Marines' case, the desired direction for the culture to go was that of building cohesion within the service around the new mission.

What Smith accomplished for amphibious assault doctrine, Brigadier General Dion Williams was able to do for training, technology, and procurement. Williams contributed to doctrine as well, he co-authored the United States Marine Corps Tentative Landing Manual in 1934, which outlined the size, composition, and training requirements of the service's advanced base operations.[57] Significantly prior to this from 1924-1925, Williams set up the Winter Exercises off the coast of Oahu. These exercises trained Marines for amphibious assault operations, and were attended by prominent members of Congress and the other services. Williams used the exercises to test new troop organizations, equipment, and tactics. The timing of these exercises was fortunate, in that War Plan Orange was in the early stages of development. At the conclusion of the Winter Exercises, Williams had demonstrated not only the effectiveness of the amphibious mission, but also convinced the War Department and Congress to approve the procurement of advanced landing craft.[58] Funds were secured to build the "alligator" that developer Donald Roebling claimed would "bridge the gap between where a boat grounded and a car flooded out."[59] A culture that identifies with a distinct mission calls for distinct equipment, and the alligator was one of the first manifestations of a military vehicle designed specifically for amphibious assault.

Finally, Williams advocated including the airplane as an organic reconnaissance and fire support asset. His idea of including fixed wing aircraft in the amphibious force package was the beginning of the combined arms concept that remains imbedded in Marine culture to this day.

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[55] Ibid., 56.

[56] Venzon, 76.

[57] Daugherty, 125-127.

[58] Ibid., 129.

[59] Kenneth Clifford, *A Developmental History of the USMC: 1900-1970* (Washington DC: US Government Printing Office, 1973), 54.

Innovative thinking that produced amphibious vehicles would later be applied to aircraft as well, leading to the development of the unique vertical/short take-off and landing assets, such as the Harrier jet. Williams' efforts to unite training with established doctrine further unified the emerging Marine Corps culture, one that over time would become synonymous with amphibious operations.

John Lejeune, the "Father of all Leathernecks," also perceived that the post-World War I Corps was in danger of not offering the Navy a capability that it could not already find in the Army.[60] Lejeune surmised that the "colonial infantry" role could not go on forever.[61] While serving as commandant, he faced an environment of reduced defense expenditures, as the nation retreated towards isolationism. However, along with Smith and Williams, Lejeune picked up on the fact that Japan was being labeled as the next enemy, and the nation was looking for any capability that facilitated overseas power projection. To Lejeune this meant an amphibious assault mission for his Marines. Although Lejeune was one of the most outspoken advocates for a unique mission, he shrewdly worked within the boundaries set by Washington, while pressing the need to reform the Corps.[62] A prolific communicator, Lejeune messaged his vision of tying the amphibious mission to the strategic environment of the United States through the extensive use of periodicals, speeches, and letters. He helped create the *Marine Corps Gazette* in 1916 and *Leatherneck Magazine* in 1926.[63] Lejeune's talent in communicating the Corps' vision to revitalize the amphibious assault capability married well with the efforts of Smith and Williams.

One of the most important of Lejeune's many contributions to resurrecting amphibious assault was his establishment of Marine schools. Lejeune created the Marine Corps Officer School at Quantico, and the Marine Corps Institute. The Marine Corps schools became the vehicle from which to distribute the emerging amphibious assault doctrine and tactics, both to officer and enlisted. Interestingly, Lejeune also enlisted help from the media and public organizations to advertise the new mission that distinguished the Corps from the other military services.[64] Now the Corps' culture was influenced from all sides by formal schools, publications, the media, and senior leadership.

Generals Smith, Williams, and Lejeune, among others, were successful in obtaining cultural buy-in from the Marines for the amphibious assault mission. This was not accidental; it was the result of the Corps' methodological approach to changing the patterns of thinking within the service, and providing the foundation (doctrine, training, tactics), from which the service's population could build cohesive support towards the mission. Although the resurrection of the

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[60] James Dillon, "John A. Lejeune, The Marine Corps' Greatest Strategic Leader" (master's thesis, U.S. Army War College, 2008), 8.

[61] Heinl, 253.

[62] Millett, 323.

[63] Dillon, 10.

[64] Ibid., 324.

amphibious assault mission coincided with the US seriously contemplating war in the Pacific as a future possibility, success was due more to Corps leaders aggressively capitalizing on the mood of the nation than temporal luck. These leaders established doctrine, and then developed tactics and refined doctrine based upon feedback from major training exercises. Approved funding to procure equipment was proof that Congress supported the amphibious assault mission. Finally, doctrine and tactics were incorporated in schools, and broadcast to both the service and national audience, bringing about the acceptance of amphibious operations as a serious form of warfare.[65]

[65] Daugherty, 3.

Chapter 5: Conclusion

There are similarities in the Army transformation and the Marine Corps' resurrection of the amphibious assault mission, and how each service's culture reacted to a significant change in practices. However, it is more helpful to note the subtle differences in order to flush out any relevant applications for the Air Force's transition to procuring low-tech assets. Army transformation was initiated from the top, by Generals Shinseki and Schoomaker. The "roadmaps" provided clear guidance on the way ahead for transformation. On the other hand, the Corps' transition was more gradual, and momentum was primarily created by middle level officers. These officers continued to carry their ideas forward as they became generals, but the transition to the amphibious mission was not initiated by a single individual, such as the Commandant.

There are pros and cons for each method. General Schoomaker was particularly focused on how he intended Army culture to accept the transformation. He explicitly discussed cultural change in the Transformation Roadmap, addressed the cultural shift early during the process, and continued to guide cultural development as the transformation progressed. In doing so, the service avoided the risk of cultural response moving in an undesired direction. A drawback to Schoomaker's approach is that it gave opponents plenty of material to work with when formulating a dissenting argument. Critics of Army transformation were quick to point out that Army culture was reluctant to accept change.[66] A 2009 Congressional Budget Office study concluded that the transformation was over budget and behind schedule, although the authors did acknowledge that significant progress had been achieved, and the overall effort was moving in the desired direction.[67] Additionally, several critics referred directly to Schoomaker's Transformational Roadmap when condemning the modular organization of fighting units. Thus far, however, Army transformation appears to have overcome these arguments, as the service is now a decade into the modular brigade combat team construct.

The Marines did not succinctly address cultural change as related to a change in operational practices. However, due to the temporal context in which the change occurred, the culture only had one choice if the service was to survive: acceptance of the new mission. During the interwar period all services were faced with the threat of significant budget reductions. The Marines also faced an identity crisis, without a unique mission. The timing of the rainbow plans, specifically War Plan Orange was critical, as was the strong leadership of personalities such as Lejeune, Smith, Williams, and others. Amphibious assault missions, in the form of seizing and

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[66] Brian Watson, "Reshaping the Expeditionary Army to Win Decisively: The Case For Greater Stabilization Capacity in the Modern Force," *Strategic Studies Institute* (2005): 4-6. Watson asserts that the Army transformation, specifically the modular force, does not address the stabilization capability requirement. He argues that "cultural aversion trumped experiential learning" in the ongoing efforts in Afghanistan and Iraq.

[67] US Congress, Congressional Budget Office, *An Analysis of the Army's Transformation Programs and Possible Alternatives*, June 2009. 35-36.

securing forward operating opportunities on islands and atolls, were a major focus of the plans. The requirement for these types of missions made it significantly easier for the Corps to sell the amphibious assault capability to the War Department. As a result of the mission being unique and relevant to the nation's desired capability, as well as a mechanism for the service to survive, cultural acceptance of the new mission did not require as much attention from leadership.

Although there have been isolated opinions that explore the possibility of the service being absorbed by the Army and Navy, the Air Force is presently not fighting for survival as a service.[68] Recently however, there has been considerable discussion between the services as to whether or not the Air Force has the correct capability to employ in irregular warfare operations. There have been small modifications in the past decade, such as the procurement of the MC-12, but to a large degree the service has retained high end assets and still remained effective. As a result, the service culture has options whether or not to accept a shift in practices. For this reason, the Army's method of focusing on cultural impact early is an appropriate one for the Air Force to adopt, in that it provides a vector for the culture to follow in the desired direction. An ever growing challenge to Air Force leadership that the Army did not encounter is the fact that the decision to procure propeller driven strike aircraft continues to remain in an indeterminate state.

Before Air Force leadership can address the issue of cultural change, they must decide on which direction the service is headed. In 2008, during the F-22 procurement debate, there was much talk among Air Force officials about the advantages of a light attack aircraft in irregular warfare operations.[69] However, the idea of propeller driven strike aircraft as a suitable combat asset has since been an on again, off again affair. In May, 2010, Air Force Chief of Staff General Schwartz announced that the light attack aircraft would only be used to train foreign air forces, and would not be used to fly combat missions.[70] The Chief maintains that the current inventory of jet strike aircraft can provide adequate capability in irregular warfare operations. Conversely, earlier in the year in his statement to the Senate Armed Services Committee, then Joint Forces

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[68] Robert Farley, "Abolish the Air Force," *The American Prospect* (November 1, 2010): http://www.prospect.org/cs/articles?article=abolish_the_air_force (accessed December 4, 2010). Farley asserts that the Air Force missions of strategic bombing and air superiority are not a suitable fit in counterinsurgency operations. He also argues that not only the tactical support roles, such as close air support and airlift, but also strategic bombing and air superiority could be absorbed by the other services. He does not address strategic airlift. Notably, Farley questions the relevance of upper end technology platforms such as the F-22.

[69] Marcus Weisgerber, "The Light Attack Aircraft," *Air Force Magazine*, January 2010, under "Fostering New Relationships," http://www.airforce-magazine.com/MagazineArchive/Pages/2010/January%202010/0110aircraft.aspx (accessed December 4, 2010).

[70] Michael Hoffman, "Schwartz: No Light Attack Aircraft in Combat," *Air Force Times*, May 7, 2010. http://www.airforcetimes.com/news/2010/05/airforce_irregular_warfare_050710/ (accessed December 4, 2010).

Commander General Mattis supported the use of light attack aircraft in combat.[71] As the current commander of Central Command, General Mattis continues to support the procurement of light attack aircraft to be used in combat missions.[72] The Navy and Marines have also expressed interest in LAAR assets, adding an element of competition to the dilemma of procuring propeller driven strike aircraft.

The current tension between the Air Force, the Navy, and the combatant commander that runs the war in Afghanistan is a possible formula for confusion among airmen. Confusion negatively impacts the ability of a service population to adopt a cohesive sense of mission, and disrupts the development of patterns of thinking. It is critical for senior Air Force leaders to counter this confusion early, in order to prevent misperceptions and lack of clarity from influencing service culture with regard to propeller driven strike aircraft. In order to understand how Air Force culture is affected by acquiring and employing LAAR assets in combat roles, it is important to consider the supporting and dissenting positions.

Two primary considerations support the position to procure LAAR assets to employ in combat. First, the Army maintains that these aircraft, which require less personnel, infrastructure, and fuel, would be better suited to operations in Afghanistan. They argue that better responsiveness and longer loiter time would be complemented by the capability to operate from small airfields, closer to forward operating bases from which the ground units operate. Soldiers maintain a keen interest in the Air Force's decisions regarding close air support assets, in that they are directly dependent upon them for support. The second consideration, advocated by an increasing number of airmen, is that LAAR assets will reduce structural fatigue on expensive platforms incurred by years of operating in irregular warfare operations. In an effort to fill the Army's close air support requests, beginning in 2001, the Air Force began supplementing fighter and attack aircraft with heavy bombers in this role. Years of loitering for hours over the area of operations has taken a toll on these strategic assets. Additionally, bombers and fighters require significant amounts of fuel, which creates high demand for limited air refueling assets. To put

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[71] "United States Joint Forces Command," Statement of General Mattis Before the Senate Armed Services Committee, March 9, 2010, http://www.jfcom.mil/newslink/storyarchive/2010/sp030910.html (accessed December 4, 2010). General Mattis' statement conflicted with General Schwartz's assertion that jet aircraft can provide adequate capability in irregular warfare operations. Note his quote in reference to light attack aircraft capability: "Our airpower is unmatched in the world, however today's approach of loitering multi-million dollar aircraft and using a system-of-systems procedure for the approval and employment of airpower is not the most effective use of aviation fires in this irregular fight. A Light Attack Armed Reconnaissance (LAAR) aircraft capability has the potential to shift air support from a reactive threat response, to a more proactive approach that reduces sensor-to-shooter timelines, with immediate and accurate fires, providing surveillance and reconnaissance throughout a mission, while providing communication and navigation support to troops on the ground."

[72] Robert Dorr, "COIN Aircraft Past, Present…and Future?," *Defense Media Network*, October 18, 2010. http://www.defensemedianetwork.com/stories/coin-aircraft-past-present-and-future/ (accessed December 4, 2010).

this demand in perspective, in 2009, aging KC-135 tankers offloaded over five million gallons of fuel, much of it in support of combat operations in the Middle East.[73]

These considerations by both soldiers and some airmen support the use of LAAR assets to perform combat operations. However, when viewed from most airmen's perspective whose culture is rooted in a service that prides itself with employing the world's most technologically advanced air force, it is easier to see how a shift backwards from high-tech assets would be a questionable change in practice. A counter-argument that has gained traction is that LAAR assets are one-dimensional, in that they can only be used in low end conflicts, whereas high-tech assets can traverse the scale, although perhaps not at maximum efficiency. Between the two arguments lies a region where service culture, if not influenced by service leaders, is prone to bifurcating into two camps. One segment of the service population could refuse to veer from the current culture that is tied to high-end technology. Simultaneously, another segment could distance itself from the legacy culture and morph into one that champions capability, in whatever form, over technology. From a cultural change perspective, a distinct vision is needed, one that either specifies or rejects a change in practices; in this case, either sticking with high technology assets, or introducing low-tech strike assets into the inventory.

According to a RAND study, highly successful organizations share a distinct identity and are clear on their purposes and on objectives that will achieve these purposes. The study further asserts that a common vision should be relatively unchanging.[74] As illustrated in the Army and Marine case studies, there is precedence for cultural acceptance of a significant change in vision, however, in each case the emerging vision was endorsed by service leadership, and a clear decision was made as to which direction the service was headed. It is critical that leaders sponsor the change in practices before the patterns of thinking start to develop within the population. Currently in the Air Force, there are two sub-cultures forming: those who support a change in practices, and those who oppose. Whichever direction the service decides to take, status quo versus the introduction of LAAR strike assets into the inventory, it is important that the Air Force unifies these sub-cultures with a common vision.

There is a noticeable lack of "guidance" from Air Force leadership on the way ahead with regards to propeller driven strike aircraft. No Air Force Transformation Roadmap has provided airmen with a sight picture of what the service will look like in ten years. In keeping with Generals Shinseki and Schoomaker's approach, the Air Force would benefit from timely discourse from leadership on what types of changes in practices are being considered, and what effect the changes will have on the institution. And finally, monitoring feedback from airmen to this discourse would be useful in gauging the service's attitude towards change.

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[73] "618th Tanker Airlift Control Center Unit Highlights," 618th Tanker Airlift Control Center, http://www.618tacc.amc.af.mil/shared/media/document/AFD-1 00127-019.pdf (accessed January 2, 2011).

[74] John Setear, Carl H. Builder, M.D. Baccus and Wayne Madewell, *Army in a Changing World: The Role of Organizational Vision, June, 1990/R-3882-A (Rand Report)* (Santa Monica, CA.: Rand Corp, 1990), 67-68.

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